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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,989	12/15/2003	Somenath Mitra	436/12	4147

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EXAMINER

FASTOVSKY, LEONID M

ART UNIT PAPER NUMBER

3742

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,989

Applicant(s)

MITRA ET AL.

Examiner

Leonid M. Fastovsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 5 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Manginell et al (6,527,835).

Manginell teaches a microheater for microanalytical system comprising a microchannel 16 formed on a silicon substrate-wafer 11 and having a length, and a conductor 13 formed in the microchannel 16, the conductor is formed from platinum metal (col. 3, lines 20-67) and disposed along a majority of the length of the channel 16.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-7, 9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manginell in view of Ferguson (2003/0209534).

Manginell discloses substantially the claimed invention, but does not disclose quartz and borosilicate glass. Ferguson discloses resistive heating systems with a substrate 202 comprising quartz and borosilicate glass (page 10, [0068]). It would have been obvious to one having ordinary skill in the art to modify Manginell's invention to include the substrate comprising quartz and borosilicate glass as taught by Ferguson in order to provide a more rigid structure for the microheater.

As for claims 9 and 13, it would have been obvious to include a glass-insulating layer disposed on the conductor 13 because it is conventional to insulate the heater-conductor to avoid short circuitry.

5. Claims 14-15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manginell in view of Lin (5,855,801).

Manginell discloses substantially the claimed invention, but does not disclose a method of fabricating including patterning and etching the substrate.

Lin discloses a method of fabricating a microstructure of a microheater comprising a microchannel 78 formed on a silicon substrate-wafer 46 including patterning and etching of the substrate 46 (col. 4, lines 21-67, col. 10, line 53-67) and etching of the substrate 46 with a boron-doped region 52 (col. 4, lines 6-67).

It would have been obvious to one having ordinary skill in the art to modify Manginell's invention to use a method of fabricating a microstructure including patterning and etching the substrate as taught by Lin as one of the conventional methods of fabricating a microstructure of the microheater (col. 4, lines 40-45).

etching the substrate as taught by Lin as one of the conventional methods of fabricating a microstructure of the microheater (col. 4, lines 40-45).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manginell in view of Kenny (6,551,849).

Manginell discloses substantially the claimed invention, but does not disclose the conductor comprising aluminum alloy and silicon.

Kenny discloses a method of fabricating arrays of microneedles-microchannels comprising electrically conductive pads 250 comprising aluminum, copper and polysilicon (col. 3, lines 15-25, col. 9, lines 15-25).

The limitation of the conductor comprising an aluminum alloy with 99% aluminum and silicon and copper, it is deemed that the material used for conductor would be chosen by the user in order to assure a good conductivity. Therefore it would have been obvious to make the conductor of Manginell out of 99% aluminum, silicon and copper as taught by Kenny in order to obtain the good conductivity of the microheater (col. 3, lines 15-25, col. 9, lines 15-25).

7. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manginell in view of Yamazaki et al (6,165,876) and further in view Ueno et al (2002/00224662).

Manginell discloses substantially the claimed invention, but does not disclose a substrate comprising a polished silicon wafer, and the conductor-heater comprising boron ions. Yamazaki discloses a method of doping a silicon film 203 with boron ion (col. 15, lines 1-18). Ueno discloses a microfluidic device having a heater 3 with a

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mirror- polished substrate (page 5, [0094]). It would have been obvious to one having ordinary skill in the art to modify Manginell's invention to include a doped substrate with boron ions as taught by Yamazaki and a polished substrate as taught by Ueno and a conductor comprising boron ions as taught by Yamazaki in order to improve crystallinity of the film heater-microheater (Abstract)

8. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manginell in view of Lin and further in view of Yamazaki.

Manginell in view of Lin discloses substantially the claimed invention, but do not teach boron ion implantation. Yamazaki teaches a method of implanting boron (col. 15, lines 1-10). It would have been obvious to one having ordinary skill in the art to modify the invention of Manginell in view of Lin to include a boron ion implantation as taught by Yamazaki in a method for fabricating a microheater of Manginell in view of Lin in order to improve crystallinity of the film heater-microheater (Abstract).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

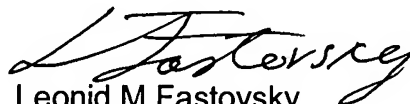
Response to Arguments

10. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid M Fastovsky whose telephone number is 571-272-4778. The examiner can normally be reached on M-Th. 8.00 am -6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Leonid M Fastovsky
Examiner
Art Unit 3742

lmf

2/6/06


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SUPERVISORY PATENT EXAMINER